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When the earth stopped shaking, where was our Library service?

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Abstract

In September 2010 the Canterbury region was hit by a 7.1 magnitude earthquake. This event took place near the end of the second term of the semester 2 and created a number of problems for students finishing their assignments and sitting examinations. After remediation of buildings and the rethinking of spaces and how they were being utilised the UC library service (alongside the rest of the University) was ready for Semester 1, 2011. Day two of the semester started well, however the Canterbury region was to again experience a strong earthquake, this time it reached 6.3 on the Richter scale and caused death and devastation across the Canterbury region. This paper will explore how the Library contributed to the retention of students over the months that were required to get the University back up and functioning and how existing and new Library services were adapted and adopted to ensure that they met the needs of students and academics living and working in a changing physical landscape located in an active seismic area.

The earthquakes

The University of Canterbury (UC) is geographically located in the Canterbury region of the South Island of New Zealand. The picturesque landscape was historically carved by seismic events and the countryside, consisting of rolling plains and majestic mountains, is criss-crossed with fault lines. The most famous of these fault lines is the Alpine Fault which was the largest known active fault in New Zealand and extends over 650 km from Milford Sound to Blenheim. (Westland District Council, 2006) This was the fault that was predicted to cause major problems for the South Island. In 1995, after undertaking a study tour of Kobe City, Japan, to see firsthand what had happened after the Hyogo-Ken Nanbu or Great Hanshin earthquake, A report from University of Canterbury staff noted–

“New Zealanders must not be complacent in their considerations of earthquakes. The attitude ‘that it will not happen to us’ or ‘it will most likely occur only in Wellington’ needs to be eradicated.” (Park et al., 1995) In 2000, Professor Park, delivering the Hopkins Lecture (Park, 2001), reiterated this statement adding “.....There is a 65% probability that Christchurch will be effected by a major earthquake over the next 50 years.” With time, the Professor was proven right.

At 4.35 a.m. on September 4th 2010, the Canterbury region sustained a 7.1 earthquake, which caused much structural damage throughout the region, thankfully no lives were lost. The fault triggered was the Greendale Fault, As University of Canterbury's Dr Mark Quigley writes on his homepage

“ The Greendale Fault was not previously recognized as an active fault because there was no field evidence for its presence beneath the Canterbury Plains. Although there is good seismic data across much of the Canterbury Plains that tells us where the active faults are, the only seismic line through this area was done for oil exploration purposes and no fault was observed in this data. This will be rectified in the coming years as we dedicate more scientific effort to this region. “(“Welcome to Mark Quigley's homepage,” 2012)

This earthquake had a focal depth of 11 km and hit with the equivalent of 671 kilo tonnes of energy, 40 km west of Christchurch. The University sustained damage to buildings and was closed for a number of days while safety checks were made. Due to the timing of the earthquake, in terms of the 24 hour clock and the academic year, there were only a few people on campus, evidence left behind by the 4 occupants in the computer lab on level 5 of the Central Library made you realise that it must have been very scary to be in the building. These

students made it safely out of the building, and they and their abandoned possession were reunited a few days later.

A series of unprecedented aftershocks followed as the University worked valiantly to reopen the campus and to ensure students were able to complete their academic year. Over the summer building remediation work took place particularly in the Central Library and it was with great joy that on the morning of the 18th February the Library hosted a breakfast for university staff and contractors upon completion of the remediation and the refurbishment work in time for the beginning of Semester 1, 2011.

On the following Tuesday, 22nd February, at 12.51 p.m., an earthquake registering 6.3 on the Richter scale, at a focal depth of 5 km which released 49 kilo tonnes of energy rocked the Canterbury region. The shaking intensity in the Canterbury region was much greater for this earthquake than that of the September event. The proximity of the epicentre to the city of Christchurch and its shallow depth resulted in building collapses and in the death of 181 people (this death toll has since risen to 185 as people who survived their initial crush injuries have died, this toll will continue to rise). The University was indeed fortunate in that no buildings on campus collapsed and no major injuries were sustained on campus.

The University community was saddened by this event in a number of ways, including the loss of four students (two who were waiting to graduate), two people with teaching affiliations to the University, the wife of a staff member, and 12 University of Canterbury alumni. (Wood, 2012) This event impacted differently on the University from the September earthquake as it was the beginning of the academic year, and students were able to make a variety of choices about where they wished to continue their studies.

University buildings were subjected to a rigorous set of criteria for safety purposes. The remediation and repair programmes were noisy, dusty and time consuming. The campus became a general construction site. The University remained closed for three weeks while buildings were inspected and decisions on how to ensure the ongoing functionality and the operation of the University were made. In order to deliver lectures and other services to students a tent city sprang up.

What happened to the UC Library system?

The timing of the two major earthquakes and how the university responded was partially dictated by where the University was in relation to the academic year. The September quake was near the end of the academic year and strategies employed were done so to ensure that students and academics were able to meet end of year requirements. While this was of course difficult for all concerned the majority of students were able in some way to complete their coursework.

In September, 2010 the Library did not have any specific strategies for service provision in response to any sort of natural disaster. There was a disaster recovery plan for fire, flood etc. for the book stock and like the majority of libraries, some resources were online. The Library was traditionally a print based, although it did provide access to electronic resources these were poorly utilised particularly the e-journals, as the reader preference remained with the print format. In 2009, the then Library Leadership Team rewrote the Collection Development Policy to include the statement that “electronic is the preferred format where the quality is comparable” (UC Library, 2010) No corresponding policies were developed to ensure that resources purchased in electronic format were fully utilised.

The earthquake on the 22nd February 2011 was at lunchtime on the second day of the first semester. Many students had not completed enrolment and many chose to study at other universities which created a diminished cohort of 1st year students for 2011. For 2nd & 3rd year students and post graduates, this was the second year of interrupted study and some students took up offers from other New Zealand universities to carry on their studies away from Canterbury, opportunities were arranged in Australia and the UK as well. Post graduate students also took up offers to study elsewhere. The accumulating effect of the earthquakes

caused major damage to a number of the Library building, and once again it was the James Hight building housing the Central Library that took the longest to reopen. The Law and Education Libraries were reopened when deemed structurally sound. The EPS Library, caught between two buildings considered to be at high risk, did not to reopen until day 1, Semester 1, 2012.

From a Library perspective the most pressing problem after the earthquake was the lack of physical space. Libraries were considered student space and social space and were thus given immediate attention, which allowed the Library, after all building safety checks were concluded, to offer services from the Macmillan Brown Library, (MB Library) the smallest library within the 5 Library system. The MB Library is extremely robust as the building rests on rubber rollers and received little damage. This offered cramped (study spaces were increased to 84 and additional staff workspaces were also created), difficult working spaces for students, academics and Library staff plus the University wide curfew meant that the opening hours were curtailed. Library buildings reacted differently to the earthquakes and the physical outcomes are summarised below –

- Education Library – very few items fell off the shelves, minimal building damage
- Macmillan Brown Library - very few items fell off the shelves, minimal building damage
- Law Library – quantity of print items fell off the shelves, less in February, medium building damage
- EPS Library - quantity of books and serials fell off the shelves, less in February, medium building damage
- Central Library – majority of print items fell off the shelves on levels 3,4,9,10 and 1, major building damage, broken windows, seismic joints working as designed

Print resources were rescued from various libraries and made available; items requested were retrieved where they were retrievable. Online resources were never off-line and e-content was kindly expanded by many vendors, increasing the chances of the academics and students finding relevant information. High Demand collections were rescued and retrieved from the other libraries and made available. Many Library staff members worked from their homes, and provided services online via email and *AskLive*, (the Library's online enquiry service), update information on the website, and perform other tasks.

"A team email and ring around of Library Research and Information Services on Wednesday 23rd February found many of the professional Library staff already working online. Well developed online services included *AskLive*, access to electronic information resources, online subject guides, online information skills development modules embedded in Learn courses or via the Library web site and the Liaison Librarian service via email. Processes were in place to recommend the purchase of suitable electronic information resources, to recommend electronic information resources as alternatives to trapped print resources and to provide links for embedding in Learn courses. Liaison Librarians partnered with academic staff to create alternative bibliographies for assignments based on accessible online resources and to convert planned face to face information skills development modules so that they could be taught online via *Learn*. (LR Working Group & Thomas, 2011)

The learning and teaching procedures for the University were evolving, with the University changing their learning management system to Moodle, however there was no mandate for academics to deliver their courses using this technology. Library staff were engaged in working with Moodle, renamed Learn. Many of the academics, who put their courses on Learn, did include a library component; often it was only the Library block which allows searches to be

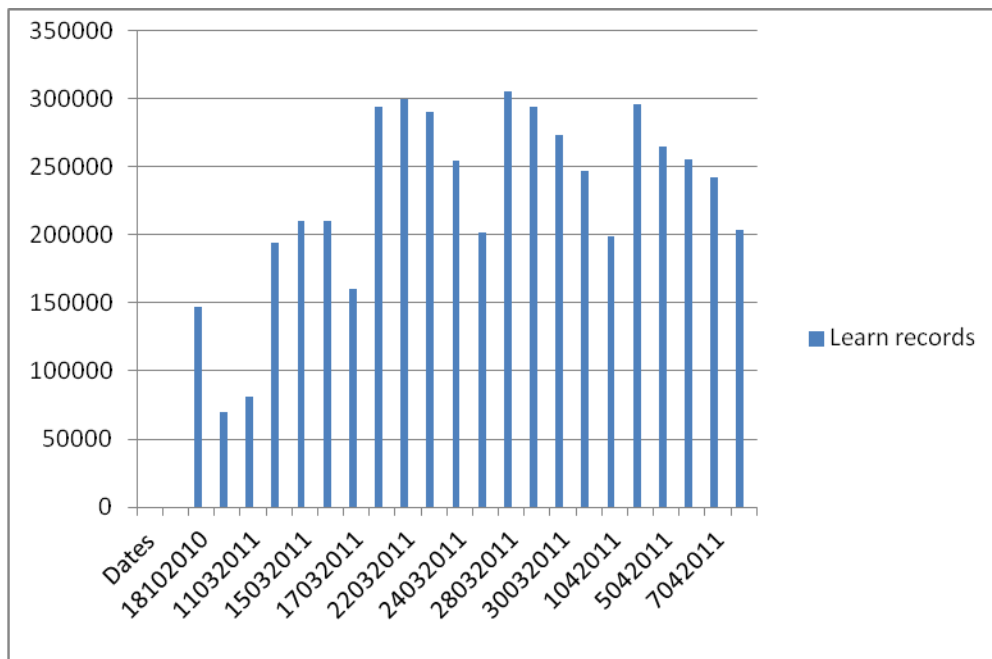
conducted on the Library database. For many of the newly enrolled students after the February earthquake this was their first introduction to the Library and its services.

“The following table (data accessed from the Learn reporting tool log) indicates the number of active courses registered on *Learn* directly before the earthquake, compared to the number of active courses registered on *Learn* virtually three months after the earthquake.

Learn usage	30 August 2010	21 February 2011	10 April 2011
Active courses in total	1277	1225	1332
Active students in total	12930	16071	17005
Active teachers in total	826	1584	1713
Active teaching assistants/tutors	31	776	944
Active courses College of Arts	282	245	302
Active courses College of BSEC	127	119	137
Active courses College of Education	400	410	417
Active courses College of Law	53	53	37
Active courses College of Science	212	206	202
Active courses Continuing Education	32	34	35
Active courses College of Engineering	171	158	202

Table 1: Registered courses on *Learn*

The relatively small number of new courses on *Learn*, nearly three months after the earthquake, does not account for the doubling of *Learn* activity directly after the earthquake, as expressed in the daily log (see Graph 1 below) of *Learn* records or transactions (e.g. an individual student requesting access to a course page or a resource). However, the number of active students using the system (17005 – not equivalent to the number of students officially enrolled at UC) represents a very high percentage of enrolled UC students, so it is conceivable that existing student users turned specifically to *Learn* after the earthquake for purposes of information-gathering, communication and gaining access to learning resources. This might also explain the growth in the number of active teachers using *Learn*.



Graph 1: Number of *Learn* records on selected days

Librarian access to communicate with students in *Learn* was limited to access to specific courses negotiated on a case by case basis with course co-ordinators and academic staff. Analysis of use of the *AskLive* online enquiry service does show a steady increase in enquiries and in the complexity of the enquiries over time following the series of earthquakes. A notable increase occurred in July when online materials were prepared for semester 2 orientation in case of further disruption. A brief information video was posted to YouTube describing the Library's online services and was embedded in *Learn* for access by all students. After one month the video had been watched over 1800 times. http://www.youtube.com/watch?v=DKH-ghh6sy4&feature=player_embedded (LR Working Group & Thomas, 2011)

On the positive side, the Library had a history of utilising online help/reference services. Since the 1990's UC library users have been able to interact with library staff online. In 2010 *AskLive* was updated and this service was heavily used post earthquakes and proved to be the lynch pin which allowed and encouraged communication between library staff and library staff, library staff and students, library staff and academics and researchers. *AskLive* was able to be used, regardless of the physical location of library staff, academics or students. (Roberts, Fitchett, & Paterson, 2011)

In terms of library user behaviours, the desire to browse collections was manifested by many; the inability to achieve serendipity was sorely missed, particularly by the Arts Faculty staff and students. Postgraduate students felt particularly disadvantaged with the ongoing closure of the Central Library and its non-retrievable collections. Getting all the levels of the Central Library open was a struggle not only was it a mammoth task to re-shelve all of the titles that were dislodged; the necessary remediation work took a lengthy period of time and both academics and students complained bitterly about the lack of general access, even though Library staff were able to retrieve some requested items.

Library resource vendors were extremely generous in providing free access to a larger set of electronic resources, e-journal, e-books (including patron driven access) to which the UC Library had not previously had access. This turned out to be a double-edged sword because making these resources accessible required a huge amount of work by Library Support Services staff to link the new resources into the Library's discovery tool. Students and academics who used the resources and have not liked losing access to them. UC Library has not been able to purchase access to all of these resources owing to budget constraints.

The Library was trialling self-service for inter library-loan, and post earthquake removed the caveat that inter library loan was only available to academics, researchers and postgraduate students and this strategy helped in the delivery of print resources. The Council of New Zealand University Libraries (CONZUL) has implemented a face-to-face borrowing scheme, ULANZ, and increased use of this scheme allowed UC community members who were able to travel to other parts of New Zealand to obtain print resources.

At the time of the September 4th earthquake, UC was undergoing massive change, through an initiative known as ProjectSTAR. This was designed to restructure the administration units in order to better support teaching and learning. This led to a new structure for the Library which commenced on 1st December 2010, with a number of key positions across the Library not in place until the first half of 2011.

The aftermath of the earthquakes sparked additional innovation by being a natural catalyst for implementing change. Projects underway included:

- High Demand collections were under review
 - linked with the High Demand review was a recall policy implementation
- self-service inter-library loan system introduced
- RFID system introduced, prompting more self service options
- Business and economics print collections relocated from Central Library to Law Library
- refurbishment of Levels 2 & 3 of Central Library, planning began in 2009, the earthquakes changed what the eventual outcome looked like,

In order to maintain the momentum needed to get the Semester 1, 2011 coursework underway a tent city sprang up. As well as traffic and construction noise, when the wind is in the north-westerly direction UC is on the flight path to the airport, therefore being able to hear the lecturer delivering the class was often problematic. The lack of study and learning spaces took its toll on students who returned to campus, they wanted safe, warm and well lit areas where students could gather and study in, in essence they wanted their normality, and so did the Library staff.

This was a period of great frustration for all, juggling the needs, wants and desires of students, academics and Library staff was extremely difficult. Not only were people struggling with what was happening on campus, off campus everyone was facing up to their own various personal circumstances which often proved difficult, if not impossible, to resolve. The University wisely created a special leave allocation for those staff that needed to take time off to attend to their homes and their loved ones. Work spaces for both University staff and students were cramped and shared by many, you could only book yourself onto a computer for an hour or two each day, and many staff worked from home or from a friend/colleagues place that still had electricity, running water and most importantly a functioning sewage system.

Staff were running on adrenalin, these were scary days, the aftershocks were strong and often. The repetitious work of picking up the print resources was tiring, dispiriting and physically exhausting. (Picture 1.) Without a fully embedded structure, the Library as part of the larger Learning Resources unit, was working within a strategic vacuum. The ability to remain flexible and adaptable was the best survival skill staff could possess as plans changed hour by hour, sometimes minute by minute in response to nature.



Picture 1. Level 4, Central Library. Majority of items have fallen off the shelves.

Lessons Learned

Rahm Emanuel is credited with saying “Never waste a crisis. It can be turned into a joyful transformation.” When a natural disaster happens it is how you react to it that matters. (Wikiquote, 2012)

The first and most important aspect was the health and safety of staff and students. This was paramount to the University. The next driver was the need to deliver business as usual in order to remain viable and this formed the basis of the University’s response. The February response was more cautious than in September, it had to be. The increased damage to the buildings, the deaths that had occurred in the city precinct and the reality that Canterbury is now an active seismic area.

The University delivered a 5 step process for ascertaining the safety of buildings. This process was highly regarded and adopted by the Christchurch City Council. The knowledge that you and your staff were entering a safe building became very important. Library staff will forever remain grateful for the retrofitting of earthquake strengthening and reinforcing undertaken in 1997/1998 in the James Hight/Central Library building. (Holmes, Wilkinson, & Gilmore, 1998)

The Library online resources were never off line this fact alone allowed the Library to continue delivering services throughout the crisis. *AskLive* services were utilised by library staff to keep in touch during times when they physically couldn’t be together and also ensured contact with academics and students. What we have learnt is that e-content is not all equal. There are usability issues for some of the platforms, technical issues including internet access, speed of access which creates barriers to the content.

Gaps have been identified and needs are being assessed, particularly the up skilling of academic staff by ensuring that they know about the e-resources, can use them, and pass on this knowledge to their students. Professional development for academics has been upgraded to include support for delivering courses online. Thomas in his post earthquake paper noted that “many of the key electronic resources made available by the Library, as well as some of the key electronic services offered by the Library, were not used as effectively as they might have been. There are many reasons for this state of affairs but the underlying problem seems to be the fact that such Library services are not yet viewed as an integral part of learning design and learning

and teaching practice. (LR Working Group & Thomas, 2011, p. 4.) The Library is developing a personal library update service which systematically identifies academic skills and information gaps and updates them. Parallel to this Library staff will also be working with students to increase their academic skills.

On the practical side, picking up hundreds of thousands of volumes from the floor numerous times lead to discussions about how the books could be made to stay of the shelves while still offering easy access to users, the Library undertook the following steps

- Seismic strengthening of the shelving bays.
 - Overhead strengthening
 - Cross bars
 - Seismic bars
- Wider shelving helps keep the books on the shelves
- Using shelving with a lip at the back,
- Special “bungies” have been commercially developed and are being trialled
 - Breaking up resources on the shelves by using book ends in the middle, this did help keep stock on shelves in February
 - Book ends having anti-slip fabric glued onto them
 - In-house development of a special system (some years prior to the earthquakes) to hold glass negatives in place, the design is being shared world wide
- Cantilevered shelves – this was trialled after the September earthquake and proved to be a worthwhile investment, although it is space hungry.

No shelving failures have happened since the February event.(Picture 2.) The shelving, once re-braced against the earthquakes proved to be more rigid, instead of the bays wobbling front to back, they now “danced” up and down. One outcome is that falling books are trapped under the bays. Shelving failures happened in the Central, EPS and Law libraries, although one bay in the Library Warehouse twisted in the September earthquake. .A contributing factor to shelving failures was the age of the units, some over 30 years old. Another contributing factor was the uneven distribution of weight throughout the shelves; bays not stacked evenly, empty shelves on one side or the other.



Picture 2. Shelving failure, Level 3 Central Library.

One activity that disappeared after “normal routines” were reinstated was the collection of various statistics e.g. gate counts, these will leave a permanent gap in our longitudinal statistical data.

Communication proved difficult. It was hard to communicate what you were uncertain off. The overarching high level communications were handled well, however it was the co-ordination of the “little” communications that required time, effort and consistency. The earthquake highlighted the importance of being able to push content out to users.

Flexibility and adaptability was required from all staff, staff shifted offices 4-6 times in 18 months. The Canterbury region is unique for their intensity and number of aftershocks this has not been previously experienced. On a daily basis staff were asked to go above and beyond their personal comfort zones.

Surviving a natural disaster and scrambling to deliver a viable service at UC has proved that libraries and their services can exist without bricks and mortar.

Another lesson learned is that the scouts are right; we do need to be prepared.

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